

Page 1 Terms

Thylakoid Space	Outer Membrane	Granum	Inner Membrane
Stroma	Intermembrane Space	Thylakoid	

Page 2 Terms & Steps

Light	Light	H+	H+	H+	H+	O ₂	ADP	H ₂ O
ATP	P _i	PS1		PS2		Thylakoid Membrane		
ATP Synthase		Stroma				Thylakoid Space		
NADP ⁺ Reductase		NADP ⁺ + H ⁺				To Calvin Cycle		
Low H ⁺ Concentration (High/Alkaline pH)				High H ⁺ Concentration (Low/Acidic pH)				
(STEP) Proton gradient allows H ⁺ to diffuse through ATP Synthase (chemiosmosis), generating ATP via photophosphorylation.								
(STEP) Water splits & ETC uses its electrons to pump H ⁺ into the thylakoid space, generating a low pH (high H ⁺ concentration) & proton gradient (many H ⁺ inside thylakoid space, few outside in stroma).								
(STEP) NADP ⁺ Reductase forms NADPH from NADP ⁺ , H ⁺ & electrons from PS1								

Page 3 Terms & Steps

NADPH	H ₂ O	PS1	O ₂	H ⁺	H ⁺
e ⁻	e ⁻	e ⁻	e ⁻	e ⁻	e ⁻
ETC	ETC	PS2	Light	Light	Pigments
Primary Electron Acceptor	Primary Electron Acceptor	NADP ⁺ Reductase	Reaction Center Chlorophyll	Reaction Center Chlorophyll	NADP ⁺
(STEP) ETC transports electrons to NADP ⁺ reductase.					
(STEP) Primary electron acceptor receives electrons from PS2 reaction center chlorophyll.					
(STEP) ATP made by photophosphorylation.					
(STEP) Light energizes electrons in PS1.					
(STEP) ETC transports electrons to PS1 reaction center chlorophyll.					
(STEP) Light energizes electrons in PS2.					
(STEP) Water splits into O ₂ & H ⁺ , donating its electrons to PS2 reaction center chlorophyll.					
(STEP) NADP ⁺ Reductase combines electrons, NADP ⁺ & H ⁺ to form NADPH.					